

ONTARIO DEPARTMENT OF AGRICULTURE.

TORONTO, MAY 1, 1894.

BULLETIN (SPECIAL).

SECOND EDITION.

DAIRYING IN ONTARIO.

Prepared by the Department.

Have Dairy products decreased in price in Ontario as much as grain?

The following statement gives the average market prices of fall wheat, spring wheat, barley and oats in Ontario for the second half of each year, from 1883 to 1892 inclusive. In addition are given the average prices received for the total output of cheese and butter at the factory and creamery for the same years. In 1893 grain prices were lower than in 1892, so that the statement is not so favorable for butter and cheese as if the year 1893 had been included. From these figures it will be seen that the grain prices decreased over 30 per cent. in ten years, dairy prices less than 6 per cent.

	Fall Wheat per bush.	Spring Wheat per bush.	Barley per bush.	Oats per bush.	Factory Cheese per lb.	Creamery Butter per lb.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
1883.....	105.0	107.0	57.0	38.0	10.45	21.33
1884.....	80.5	81.4	53.6	33.1	10.46	21.69
1885.....	81.5	80.6	55.2	31.5	8.12	19.69
1886.....	73.6	72.5	51.3	32.0	9.25	19.52
1887.....	78.4	78.0	56.7	34.6	10.54	20.10
1888.....	102.4	99.3	60.1	40.5	9.24	19.52
1889.....	88.4	88.1	44.0	30.5	9.35	21.01
1890.....	94.2	91.3	50.2	41.1	9.06	19.24
1891.....	95.1	92.9	49.1	36.5	9.35	20.51
1892.....	70.7	67.8	41.3	30.8	9.55	20.59

Is Dairying less exhaustive upon the soil than other methods of farming?

The constituents of which a soil first becomes exhausted are nitrogen, phosphoric acid and potash. The following table gives the amounts of these three removed in \$1,000 worth of the different products. If special fertilizers were bought to restore the material removed it would take the quantity stated. The values given are to be considered as relative, merely for comparison. Thus hay removes from the soil 550 times as much fertility as butter of the same value.

\$1,000 Worth of	Nitrogen.	Phosphoric Acid.	Potash.	Relative Value.
	lb.	lb.	lb.	\$
Timothy hay (100 tons).....	2,530	1,060	1,800	550
Wheat (1,400 bush. grain)...	1,980	748	512	410
Barley (2,500 bush. grain)...	1,888	986	600	410
Turnips (10,000 bush. roots)...	1,080	600	2,340	275
Fat cattle (20,000 lb. alive) ..	465	310	35	103
Whole milk (10,000 gals.)....	592	200	170	120
Cheese (10,000 lb.).....	450	115	25	88
Butter (5,000 lb.).....	5	.....	.....	1

From this it will be concluded that the removal of hay from the farm is one of the most exhaustive practices, and the exportation of hay in any large quantity from Ontario should not be desired or encouraged. The sale of live stock instead of grain retains a large portion of the soil constituents of the crop upon the farm. In the matter of dairy products there is a great difference; thus whole milk sold off the farm removes a great deal of soil constituents; cheese removes less, providing the whey is returned to the farm; butter removes practically nothing, providing the skim milk and buttermilk are consumed upon the farm. Dairy farming preserves the fertility of the farm, and in many cases increases it, since some extra food is frequently brought in for feeding. The reason why butter removes so little from the soil is that it consists of material which the plant takes up from the air, and not from the soil.

If high prices for grain should return in the future the dairy farmers will have their soils in the best condition to take advantage of the change if they so desire.

Is Ontario adapted to Dairying?

We have good soil, good water, good stock, good feeding crops and good farmers. On the 175,000 farms of Ontario there are about 800,000 milch cows. At an average of 4,000 lb. per cow these produce 3,200,000,000 lb. of milk, worth \$32,000,000 at one cent a pound. The number of cows could be increased, since there are less than 5 cows to the average 130 acre farm. By judicious breeding, selection, feeding and care, the average product per cow may be materially increased. Many of the leading dairy farmers of Ontario produce over 8,000 lb. per cow for their entire herd.

Ontario can grow good crops, as the following statement shows, which gives the average per acre for the ten years 1883-92.

	Fall Wheat.	Spring Wheat.	Barley.	Oats.
	bush.	bush.	bush.	bush.
Ontario	19.5	15.5	25.7	35.2
New York	14.8	.....	21.6	27.1
Pennsylvania	12.6	.....	.....	28.1
Ohio	13.2	.....	.....	29.9
Michigan	15.6	.....	.....	31.6
Indiana	12.8	.....	.....	26.7
Illinois	13.5	.....	.....	31.5
Wisconsin .....	.....	12.3	23.6	31.0
Minnesota .....	.....	13.0	23.1	31.6
Iowa .....	.....	11.8	22.3	32.1
Nebraska .....	.....	12.3	22.1	30.3

The following statement of the production of factory cheese in Ontario for the ten years 1883-92 shows that this province is well adapted to dairying.

Year.	No. of Factories.	Cheese Made. lb.	Value of Cheese. \$	Value of Cheese per lb. Cents.
1892	856	93,848,942	8,959,939	9.55
1891	838	81,929,042	7,656,484	9.35
1890	817	79,364,713	7,189,957	9.06
1889	784	72,592,847	6,787,619	9.35
1888	737	65,299,761	6,031,470	9.24
1887	737	65,638,666	6,918,913	10.54
1886	770	65,721,621	6,893,813	9.25
1885	753	71,209,719	5,781,669	8.12
1884	751	66,939,573	6,996,689	10.46
1883	685	53,513,032	5,589,339	10.45

The following statement gives the rural area and rural population of the leading cheese counties of Ontario, together with the amount of cash that came into each county for cheese made in 1892.

County.	Facto- ries.	Value of cheese made.	Assessed rural area.	Assessed rural population.	Cheese per head.
	No.	\$	Acres.	No.	\$
Leeds	76	807,360	472,560	21,715	37
Grenville	33	418,157	271,590	13,717	31
Oxford	41	847,643	472,927	30,213	28
Dundas	36	835,069	237,830	14,047	24
Hastings	74	798,937	979,903	35,300	23
Lennox and Addington	26	385,837	429,408	18,270	21
Frontenac	42	348,013	682,262	20,908	17
Middlesex	36	482,599	757,485	45,905	15
Perth	25	432,024	517,916	29,540	15
Lanark	29	307,892	667,961	20,002	15
Stormont	27	232,826	250,578	16,932	14
Northumberland	36	327,554	434,900	25,668	13
Prescott	39	252,707	287,587	19,289	13
Peterboro	29	226,939	543,378	18,761	12
Elgin	24	282,520	437,068	24,723	11
Bruce	22	242,437	835,368	40,527	6
Total	595	6,728,514	8,278,681	395,517	17
Total for Province	856	8,959,939	22,885,464	1,103,433	8

From this it will be seen that these sixteen counties produce just 75 per cent. or three-fourths of the entire cheese made in Ontario. If they all equalled Leeds per head of rural population their total make would be increased by \$7,500,000. If the entire province equalled Leeds the total make would be \$40,000,000. It will thus be seen that although we have made a fair start in cheese-making we have not by any means reached the limit of our possibilities in dairying. We can greatly increase our output of cheese if desirable, and we can greatly improve the quality of our 50,000,000 pounds of butter by the adoption of the creamery system and by improved methods in the home dairies.

In 1892 there were 48,600 patrons of Ontario cheese factories, about one quarter of all the farmers. These netted on the average \$160. In Oxford there were 3,120 patrons who netted \$230, and in Leeds and Grenville there were 4,635 patrons who netted \$225. These three counties have only six per cent. of the total rural population, yet they have 15 per cent. of the total number of patrons, and receive 23 per cent. of the total cash received for cheese.

Have the Dairy exports of Canada been increasing or decreasing ?

The following statement shows that our cheese exports have been regularly increasing since 1872; that our butter exports dropped to \$331,958 in 1889, since when, however, there has been a gradual increase.

Exports of Canadian-made Dairy Products.

Year ending June 30.	Cheese.		Butter.	
	Amount.	Value.	Amount.	Value.
	lb.	\$	lb.	\$
1872.....	16,424,025	1,840,284	19,068,448	3,612,679
1877.....	37,700,921	3,897,968	15,479,550	3,224,981
1882.....	50,807,049	5,500,869	15,161,839	2,963,156
1887.....	73,604,448	7,108,978	5,485,509	979,126
1888.....	84,173,267	8,928,242	4,415,381	798,678
1889.....	88,534,837	8,915,684	1,780,765	331,958
1890.....	94,260,187	9,372,312	1,951,585	340,181
1891.....	106,202,140	9,508,800	3,768,101	602,175
1892.....	118,270,052	11,652,412	5,736,696	1,066,066
1893.....	133,946,365	13,407,470	7,036,013	1,296,814

Exports of Cheese from Montreal for 20 Seasons.

Year.	Boxes.	Year.	Boxes.	Year.	Boxes.	Year.	Boxes.
1874.....	359,252	1879.....	516,249	1884....	1,108,448	1889.....	1,157,854
1875.....	507,062	1880.....	507,019	1885....	1,076,601	1890.....	1,391,298
1876.....	465,660	1881.....	551,847	1886....	891,965	1891.....	1,352,670
1877.....	398,138	1882.....	677,211	1887....	1,104,065	1892.....	1,651,708
1878.....	467,676	1883.....	859,612	1888....	1,134,349	1893.....	1,690,274

What about the exports from the United States ?

The cheese exports have fallen off 65,000,000 lb. from 1881 to 1892, and the butter exports by one-half. Notice the great decrease in butter from 1892 to 1893. There was a great falling off in cheese and butter in 1893 after June 30, not included in this statement. There does not appear to be any reason for concluding that the United States dairy exports will increase in the next few years. In fact we may ere long find a market in the Eastern States for some of our best cheese.

Exports of Dairy Products from United States.

Year ending June 30.	Butter.		Cheese.	
	Amount.	Value.	Amount.	Value.
	lb.	\$	lb.	\$
1881.....	31,560,500	6,266,024	147,995,614	16,380,248
1885.....	21,682,148	3,643,646	111,992,900	10,444,409
1889.....	15,504,978	2,568,765	84,999,828	7,889,671
1890.....	29,748,042	4,187,489	96,376,058	8,591,042
1891.....	15,187,114	2,197,106	82,138,876	7,406,376
1892.....	15,047,246	2,445,878	82,100,221	7,676,667
1893.....	8,920,107	1,672,690	81,350,923	7,624,648

With what countries other than the United States do we compete in the British market?

The following statement of British dairy imports for 1892 shows that while we contributed 46 per cent. of the total imports of cheese, we contributed only less than 3 per cent. of the butter, and none of the condensed milk. The table shows that the United States comes second as a contributor of cheese, and we have just shown that the exports of cheese from that country have been gradually decreasing. In the matter of butter Canada stands seventh, Denmark sending fifteen times as much and Australia one and a half times as much. The table following shows the enormous dairy imports of Great Britain and also the gradual increase in the imports and consumption since 1861.

Average Importations per head of Population.

Years.	Population of United Kingdom.	Butter and margarine.	Cheese.
	No.	lb.	lb.
1861-65.....	29,459,465	3.9	2.9
1866-70.....	30,696,335	4.3	3.4
1871-75.....	32,189,540	4.8	4.7
1876-80.....	33,929,039	6.2	5.7
1880-85.....	35,465,817	7.2	5.7
1886-90.....	36,890,471	8.7	5.8
1891-92.....	37,952,402	10.1	6.3

British Imports for the Year 1892.

Country.	Butter.		Cheese.		Condensed milk.
	Amount.	Value.	Amount.	Value.	Amount.
	lb.	\$	lb.	\$	lb.
Denmark	96,715,584	23,597,177	12,880	1,853	448
France	60,780,944	14,735,954	5,107,760	696,946	29,106,000
Sweden	25,635,120	6,049,344	163,590	14,665	98,112
Holland	15,885,856	3,651,533	30,687,952	3,302,389	14,418,768
Germany	13,914,096	3,474,114	141,680	16,970	599,456
Australasia	9,802,240	2,308,408	2,865,520	310,927	5,936
Canada	6,671,952	1,244,172	116,323,068	12,135,642	
United States	5,246,752	930,239	91,664,466	2,545,514	139,440
Belgium	4,328,688	1,044,795	2,916,368	312,795	3,097,808
Russia	4,150,832	895,235	146,944	16,693	263,760
Norway	1,055,400	240,301	14,224	1,412	6,060,656
Other countries.	809,544	60,321	51,072	6,076	133,504
Total	244,497,008	58,230,591	250,075,504	26,361,632	53,913,890
					\$4,537,403

In what way has Denmark got such a hold upon the British butter market?

In 1892 the butter of Denmark averaged 24.4 cents per pound, that from France 24.2 cents, the rest of the imports 22.8 cents. That from Canada averaged 18.7 cents and that from the United States 17.7. It appears therefore that the highest priced butter came in in largest quantities and the lowest priced in smallest quantity, or that *quality* controls the British market. There was a difference of nearly six cents per pound between Danish butter and Canadian butter. Six cents a pound means a difference of \$9.60 for the cow producing only 160 lb. per season.

Let us take a glance at Denmark. The area of the kingdom is 15,289 sq. miles, or 9,784,960 acres; the farm lands of Ontario are 22,646,000 acres in extent. The population of Denmark in 1890 was 2,185,335, of which 882,336 were engaged in agriculture; the population of Ontario in 1891 was 2,114,321, of which about 875,000 were living on farms. Denmark therefore has a total and an agricultural population about equal to Ontario, and a total area less than one-half of the farm lands of Ontario.

In 1865 Denmark exported only 10,837,000 lb. of butter of a very inferior quality; in 1891 she exported over 100,000,000 lb. of the highest quality. The production in 1891 was 170,000,000 lb. In fact of such high quality is the butter, that she imports cheaper butter for home consumption than she may export her own high priced butter. The success of Denmark does not come from her pastures, her climate or her cattle. Practical instruction in butter-making has been carried on; a great improvement has been made in the feeding and care of stock; the system of co-operative dairies has become universal; and the latest improved machinery and inventions of scientific experts applied to their work. The co-operative creamery system was begun in 1881-2, now there are nearly 1,500 creameries with a capacity of from 300 to 1,500 cows each. Denmark now supplies Britain with a large quantity of butter of uniformly good quality, and the supply is regular and constant.

Now let us turn to Ontario and we ask the question :

What has been done in Ontario in the way of making butter in creameries ?

The following is taken from the reports of the Bureau of Industries. The amount and value of butter made are for the number of creameries making returns :

CREAMERIES IN ONTARIO.

Year.	No in Operation	No. Making Returns.	Amount Butter Made.	Value of Butter Made.	Value per lb.
			lb.	\$	cents.
1892	50	29	1,867,758	382,576	20.59
1891	39	30	1,402,309	287,559	20.51
1890	39	32	1,147,555	220,844	19.24
1889	33	30	876,003	184,067	21.01
1888	31	24	638,215	124,580	19.52
1887	42	25	888,863	118,662	20.10
1886	47	29	823,863	160,798	19.53
1885	27	13	353,347	69,583	19.69
1884	23	8	147,924	32,088	21.69
1883	27	12	243,902	51,817	21.33

In 1892, therefore, less than 3,500,000 pounds of creamery butter were produced in Ontario, which would be less than 10 per cent. of the total butter made in the province; that is, for every pound of creamery butter made there are over 10 pounds of dairy butter made.

What is the difference in price between different grades of butter?

The following prices of butter are taken from the reports of the Toronto wholesale market as found in the daily papers :

PRICES OF BUTTER IN WHOLESALE MARKET, TORONTO.

First of every month.	June 1892 to May 1893.			June 1893 to May 1894.		
	Dairy.		Creamery.	Dairy.		Creamery.
	Lowest.	Highest.		Lowest.	Highest.	
June.....	12	14	.....	13	15	.....
July.....	13	14	.....	14	18	21
August.....	12	16	21	16	18	22
September.....	12½	22	22½	16	18	23
October.....	12	18	.....	18	22	26½
November.....	13	20	24½	15	21	.....
December.....	13	19	.....	16	21	25
January.....	12	19	.....	16	22	.....
February.....	14	20	25	16	20	25½
March.....	15	20	25	15	20	23½
April.....	16	22	25	16	21	23½
May.....	17	19	24	14	19	24
Averages...	13.5	18.6	23.6	15.4	19.6	23.7

¶ From the above it will be seen that dairy butter varies as much as seven cents from the poorest to the best, and that creamery butter on the average sells for 4 to 5 cents higher than the best dairy. The quotations for creamery showed but little range each month, seldom more than 1 cent, proving that the quality was uniform. It will be noticed also that creamery butter throughout the year ranged from 21 cents to 26, whereas dairy butter ranged from 13 to 22. We must conclude that creamery butter brings a fairly uniform price and is worth from 4 to 8 cents a pound more than dairy butter. It costs from 3½ to 5 cents a pound to make creamery butter, so that patrons of creameries have been getting more for their cream than home butter-makers have received on the average for their butter.

It will also be noticed that the average price of creamery butter for the past year was just the same as for the previous year, but that the average of the highest prices of dairy butter was 1 cent higher and the average of the lowest prices 2 cents higher than during the previous year. The quality of dairy butter on the market therefore has improved during the past year. This is doubtless due in no small measure to the good work of the Travelling Dairies sent out

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by the Ontario Department of Agriculture. The improvement of our 50,000,000 pounds of dairy butter to the extent of only $1\frac{1}{2}$ cents per pound means an increase in value of \$750,000. If one-half of this could be turned out as first-class creamery butter the value would be increased by about \$1,500,000 at the prices of the past year. It will be seen that our creamery butter approaches in price the Danish creamery. The bulk of our exports to Great Britain must have consisted of dairy butter of rather inferior quality—hence the low price received.

Will the use of improved methods increase the quantity of butter?

We have already stated that method tells upon *quality* and that quality makes the price: and that the creamery system supplies butter of uniformly good quality. Now as to *quantity*. At the Dairy Department of the Agricultural College last year, experiment was made upon 3,081 lb. of milk; one-third was creamed by shallow pan, one-third by deep pail and one-third by separator. 127.58 pounds of butter were made in all. The total loss of fat in skim-milk and buttermilk was as follows in each case: by separator 0.47 pounds; by deep pail 1.67 pounds; by shallow pan 3.29 pounds. Thus 2.82 pounds more were lost by shallow pan than by separator. These 2.82 pounds of fat would make over 3 pounds of butter. The average cow produces say 4,000 lb. of milk. Then by shallow pan 12 lb. of butter per cow would be lost by the shallow pan method, which would be retained by the best creamery method. For a herd of ten cows this would make a difference of \$25. The ordinary farm method would increase this difference. The conclusion is that by sending the milk to a creamery at least 12 lb. per cow more will be obtained than if the milk is creamed at home in shallow pans.

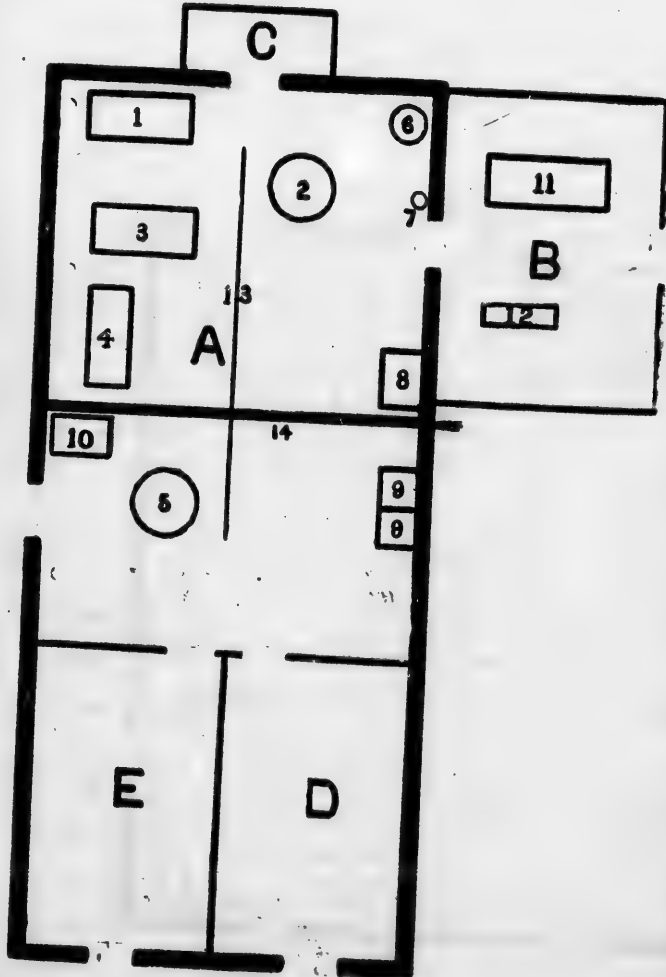
This is not to be confused with the frauds that profess to make more butter from milk than is contained in the milk.

SEPARATOR CREAMERY—DESCRIPTION OF PLAN.

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|------------------------------|--|-------------------------------|
| A. Working room, 20 x 30. | 1. Receiving vat (elevated 3 ft., or by using pump it may sit on floor). | 8. Skim-milk tank (elevated). |
| B. Boiler-room, 12 x 16. | 2. Separator. | 9. Cold and hot water boxes. |
| C. Weighing platform, 4 x 8. | 3. Cream vat. | 10. Buttermilk tank. |
| D. Ice house, 10 x 16. | 4. Churn. | 11. Boiler. |
| E. Store room, 10 x 16. | 5. Worker. | 12. Engine. |
| | 6. Water tank overhead. | 13. Line of shafting. |
| | 7. Babcock tester. | 14. Gutter. |

PLAN OF A SEPARATOR CREAMERY.

CAPACITY, 500 Cows.



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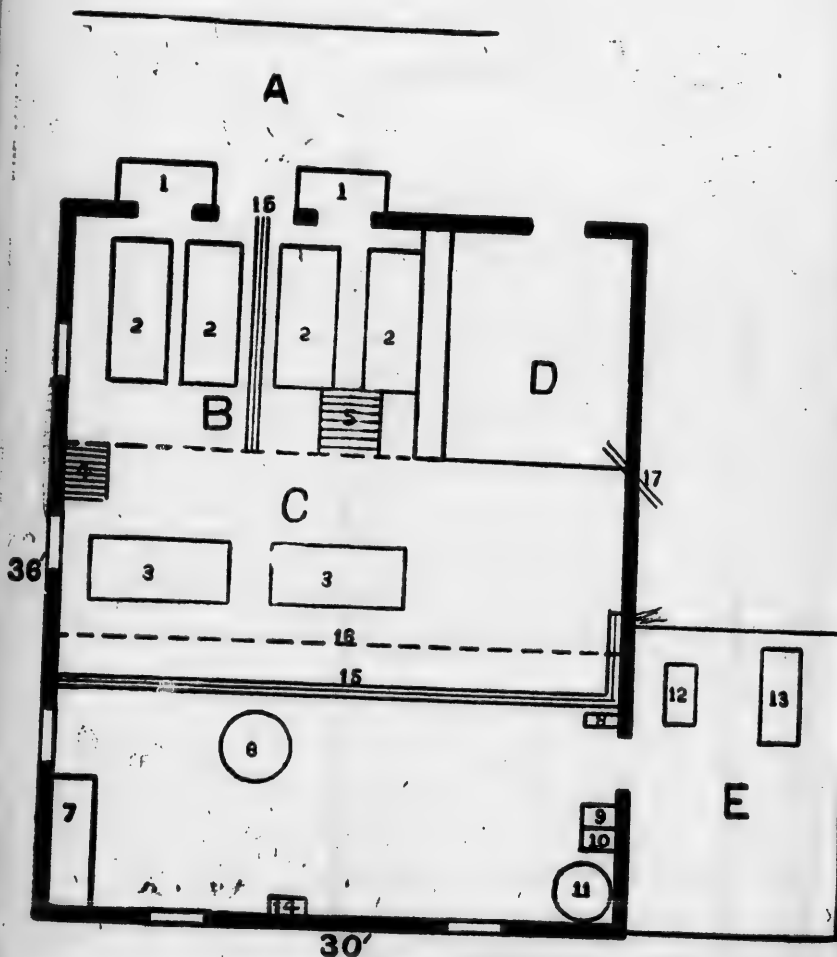
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PLAN OF CREAMERY ON CREAM-GATHERING PRINCIPLE.

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CREAM-GATHERING CREAMERY—DESCRIPTION OF PLAN.

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| A. Covered drive way.
B. Cream platform raised 8 ft.
C. Churning floor.
D. Ice house.
E. Engine and boiler room. | 1. Platform for delivery can.
2. Cream vats.
3. Churn.
4. Steps to platform.
5. Steps to storeroom underneath.
6. Worker.
7. Salt table.
8. Oil test churn.
9. Hot water.
10. Cold water. | 11. Cold water tank elevated.
12. Engine.
13. Boiler.
14. Desk.
15. Gutter.
16. Line of shafting.
17. Drain from ice house.
Floors in B to slant one inch to gutter, in C to slant two inches to gutter. |
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What will be the cost of a Factory or Creamery?

The cost of the building will vary from \$1,500 to \$3,000 according to size and material used. A building may be erected for summer cheese-making alone, for summer cheese and winter butter-making, or for butter-making alone. The following are simple plans for the arrangement of a creamery for working on the separator plan and for working on the cream-gathering plan. In the former the whole milk is drawn sweet to the creamery, the cream at once removed by a separator and the sweet skim-milk taken home; in the other the milk is creamed at home and the cream only brought to the creamery; all things considered the separator creamery is to be preferred. \$2,500 to \$3,000 will build and equip in first class style a creamery with separator. The territory of any creamery may be enlarged by having skimming stations to which milk is drawn from the surrounding locality. The cream is separated at these stations and then taken to the central creamery to be churned along with the cream from other stations. The equipment for each skimming station will be less than for a complete creamery, the butter will all be uniform and the cost of labor will be less than if several small creameries were established. This is in accordance with the methods of the most successful manufacturing industries. The method is now being tried in Ontario. The creamery at St. Albans, Vt., U.S., is conducted in this way. The milk is separated at 59 different skimming stations throughout the state; the cream is brought to St. Albans by rail and 2,000,000 pounds of butter were made in 1892.

Where it is desired to continue dairying through the winter in a cheese-making district it will be found that it will cost about \$250 to make alterations in the factory building, and \$750 to put in the appliances for butter-making. Then cheese can be made during the summer and butter during the winter.

What will it cost to equip a Factory?

The following statements give the approximate cost of equipment.
From \$50 to \$75 more may be allowed for extras.

CHEESE FACTORY OUTFIT FOR 500 COWS, EXCLUSIVE OF BUILDINGS.

Boiler and engine.....	\$300 00
Two 600-gallon vats.....	120 00
One 12-hoop Fraser gang press.....	85 00
One 6-gang upright press.....	60 00
One 14-foot curd sink.....	25 00
One 800-lb scale, double beam.....	20 00
One 50-gallon weigh can.....	8 00
Milk conductor, head and pipe.....	3 50
Two curd knives.....	12 00
Curd scoop, dipper, pails and thermometer.....	4 00
One 24-bottle Babcock tester.....	20 00
One curd mill.....	20 00
Steam pipe, shafting, pulleys, hangers, etc., about.....	50 00
	<hr/>
	\$727 50

OUTFIT FOR A CREAMERY ON THE SEPARATOR PLAN FOR 500 COWS, EXCLUSIVE OF BUILDINGS.

Boiler and engine.....	\$300 00
One separator.....	400 00
Two 300-gallon cream vats.....	100 00
One 400-gallon receiving vat.....	50 00
One 400-gallon churn and butter worker.....	120 00
One 800-lb. scale, double beam.....	20 00
One 50-gallon weigh can.....	8 00
One conductor, head and pipe.....	3 50
One 24-bottle Babcock tester.....	20 00
Dippers, pails and thermometers.....	5 00
Butter ladles and packer.....	2 00
One tempering vat or heater.....	20 00
Shafting, belts and pulley, say.....	75 00
One 240-lb. scale.....	10 00
	<hr/>
	\$1,133 50

CREAM GATHERING OUTFIT FOR A CREAMERY OF 500 COWS, EXCLUSIVE OF BUILDINGS.

One boiler and engine.....	\$300 00
Two 300-gallon cream vats.....	100 00
One 400-gallon churn and butter worker.....	120 00
One 800-lb. scale, double beam.....	20 00
One 240-lb. scale—butter.....	10 00
Ten Curtis refrigerator carrying cans.....	100 00
One No. 2 oil test churn, Curtis.....	60 00
Five driver's cases.....	12 00
Pails, ladles, packers, etc.....	5 00
Shafting, pulley, belts, etc.....	50 00
Sundries.....	10 00
One 50-gallon weigh can.....	8 00
	<hr/>
	\$795 00

OUTFIT OF COMBINED CHEESE AND BUTTER FACTORY ON CREAM GATHERING PLAN FOR 500 COWS, EXCLUSIVE OF BUILDINGS.

equipment.

LDINGS.

\$300 00
120 00
85 00
60 00
25 00
20 00
8 00
3 50
12 00
4 00
20 00
20 00
50 00

\$727 50

EXCLUSIVE OF

\$300 00
400 00
100 00
50 00
120 00
20 00
8 00
3 50
20 00
5 00
2 00
20 00
75 00
10 00

\$133 50

EXCLUSIVE OF

\$00 00
00 00
20 00
20 00
10 00
10 00
50 00
12 00
5 00
50 00
10 00
8 00

\$5 00

Boiler and engine.....	
Two 300-gallon cream vats.....	\$300 00
One 400-gallon churn and butter worker.....	100 00
One 800-lb. scale, double beam.....	120 00
One 240-lb. scale, butter.....	20 00
Ten Curtis refrigerator carrying cans.....	10 00
One No. 2 Curtis oil test churn.....	100 00
Five driver's cases.....	60 00
Pails, ladles, packers, etc.....	12 00
Shafting, pulleys, belts, etc.....	5 00
One 50-gallon weigh can.....	50 00
One conductor, head and pipe.....	8 00
One 24-bottle Babcock tester.....	5 00
Two 600-gallon cheese vats.....	20 00
One Fraser gang press.....	120 00
One 6-gang upright press.....	85 00
One 14-foot curd sink.....	60 00
Two curd knives, perpendicular and horizontal.....	25 00
One curd mill.....	12 00
Curd scoops, pails, etc.....	20 00
	5 00

\$1,137 00

OUTFIT FOR CHEESE FACTORY AND CREAMERY COMBINED, WITH SEPARATOR FOR 500 COWS, EXCLUSIVE OF BUILDINGS.

Boiler and engine.....	
One separator.....	\$300 00
One 400-gallon receiving vat.....	400 00
Two 300-gallon cream vats.....	50 00
One 400-gallon churn and worker.....	100 00
One 800-lb. scale.....	120 00
One 50-gallon weigh can.....	20 00
One conductor, head and pipe.....	8 00
One 24-bottle Babcock tester.....	3 50
Dippers, mops, thermometers, etc.....	20 00
Butter ladles, pails and packers.....	5 00
One tempering vat or heater.....	5 00
Two 600-gallon cheese vats.....	20 00
One Fraser gang press.....	120 00
Six upright gang presses.....	85 00
One 14-foot curd sink.....	60 00
Two curd knives.....	25 00
Curd scoop, pails, etc.....	12 00
Curd mill.....	5 00
Shafting and pulleys.....	20 00
One 240-lb. butter scale.....	75 00
	10 00

\$1,463 50

Are there any other advantages in the Co-operative system of butter or cheese-making.

A skilled expert may be employed who will produce a uniform article of high quality and who will do the work more cheaply than it can be done at home upon 50 farms separately. The farmers' wives and daughters will be relieved of a large amount of tedious, monotonous work, the cost and trouble of marketing will be avoided and the returns will be *in cash* instead of in store supplies. The feeding of hogs on the by-products can be more satisfactorily carried on under the factory system, in which case the skim-milk is obtained sweet, and sweet skim-milk contains more food than partially soured skim-milk.

What is the best way to start a Factory or Creamery?

In localities where the people know very little about the management or requirements of a cheese factory or creamery, it is a good plan to secure the services of some competent person to address a public meeting on the advantages and essentials of co-operative dairying. Seek to get the support and influence of some prominent men in the locality, as the majority are apt to wait and see what action half a dozen leading farmers are going to take. If these men support it, then nearly all are likely to fall into line. It would be well at this or some other meeting to divide the territory into, say, four sections, and appoint a committee of two in each section to canvass the neighborhood and find out the number of cows within a radius of five or six miles, and the number of men who will pledge the milk from their cows for a term of three or five years, if the factory is erected. After this committee reports there will be some data to proceed upon for future operations. Unless the milk from about 300 cows can be secured, or there is a probability of having this number in the near future, it would not be advisable to build a factory and equip it on a very extensive scale.

The next step would be to select a couple of suitable men to go into cheese and butter districts and gather all the information possible in reference to feeding cows, care of milk and cream, methods of conducting the business, plans of buildings, and all matters pertaining to the dairy. Twenty-five dollars spent in this way may save one hundred and twenty-five dollars in future operations.

What is the method of conducting the business?

There are several ways of starting and conducting the business, but usually it is either what is known as "private enterprise" or the "joint stock company" plan. In the first, some person or persons agree to build a suitable building, equip it properly, and manufacture the milk or cream at a certain rate per pound, the patrons contracting to furnish the milk from a certain number of cows for a certain number of years. In this case the private individual, running all risks as he does, usually charges a higher rate than the joint stock factories. For cheese the rate usually varies from $1\frac{1}{2}$ cents to $2\frac{1}{2}$ cents per pound, the patrons delivering the milk on the milk stand or at the factory, usually the former. For butter the rate varies from 3 to 5 cents per pound.

In the joint stock company method the patrons (and others also) subscribe all or a portion of the money required to build and equip the factory, thus becoming owners of the building and plant as well as of the cows. This method has several advantages, chief of which are—

1. The shareholders, who are chiefly patrons of the factory, have an interest in its welfare, and are more likely to give it hearty support than if it is owned by some one else.
2. The patrons receive the benefit of the profits of manufacture, which may be applied in reducing the cost of manufacture to shareholders to its lowest limit, after all encumbrances have been paid; or a dividend may be declared each year after paying running expenses, cost of repairs, etc.

Some cheese factories are able to haul the milk and manufacture the cheese of shareholders for one cent per pound. (It is usual to charge non-shareholders an excess rate of about one-quarter cent per pound.) Unless there are men in the neighborhood likely to succeed as managers, and who will undertake the work, it would be better to start a factory on a private enterprise plan.

How may a Dairy Company become incorporated ?

By special Act passed March 23rd, 1888, by the Legislature of Ontario, as follows :

AN ACT TO PROVIDE FOR THE INCORPORATION OF CHEESE AND BUTTER MANUFACTURING ASSOCIATIONS.

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows :

- 1.—(1) At any time hereafter, any five or more persons who desire to associate themselves together for the purpose of manufacturing cheese or butter, may make, sign and acknowledge before a notary public, commissioner or justice of the peace, in duplicate, and file in the office of the registrar of the registry division in which the business is to be carried on, a certificate in writing, in the form mentioned in the schedule to this Act, or to the same effect, together with the rules and regulations, signed by such persons respectively.
- (2) The signatures to the rules shall be verified by the affidavit of a subscribing witness thereto, made before a notary public, justice of the peace or commissioner authorized to take affidavits, or before the registrar or deputy-registrar.
- (3) Upon the filing of the certificate and rules as aforesaid, the members of the association shall become a body corporate, by the name therein described, with the power to hold such lands as are required for the convenient management of their business.
- (4) The registrar or deputy-registrar shall, if desired by the person filing the certificate, endorse on the other duplicate certificate and upon the duplicate of the rules, certificates of the other duplicates having been filed in his office, with the date of filing, and every such certificate shall be *prima facie* evidence of the facts stated therein and of the incorporation of the association.
- (5) All rules made by the association may be repealed, altered or amended by other rules passed at a regular meeting called for that purpose, provided no such new rule shall have any force or effect until a copy, proved by the affidavit of the president or other head officer of the association, to be a true copy of the rule or rules passed by the association at a meeting specially called for the purpose of considering the same, has been filed in the registry office in which the certificate of incorporation was filed.
- (6) The association shall cause a book to be kept by the secretary, or by some other officer especially charged with that duty, wherein shall be kept,
 - (a) A duplicate of the certificate and of the rules filed as aforesaid in the office of the registrar, so that persons becoming members of the association may sign the said certificate and rules.
 - (b) Any person so desiring to become a member of, or a stockholder in the said association after incorporation as aforesaid, may sign the said certificate and rules in the said book, and shall thereupon become such member, and he shall be entitled to the rights and privileges thereof, and shall become liable as such member as fully as though he had signed the certificate prior to the said incorporation of the association.

2. No association shall be registered under a name identical with that by which any other existing association has been registered, or so nearly resembling such name as to be likely to deceive the public.

3. Any certificate so to be filed may designate any one or more places where the business is to be carried on; but if in different registry divisions, a duplicate must be filed in the registry office of each division.

4. A member of an association incorporated under this Act may have shares therein to an amount mentioned in the by-laws of the association not to exceed \$1,000.

5. Before an association commences operations under this Act, they shall agree upon and frame a set of rules for the regulation, government and management of the association, which shall contain - (1) a mode of convening general and special meetings; (2) provisions for audit of accounts; (3) power and mode of withdrawal of members; (4) appointment of managers and other officers and their respective duties, and a provision for filling vacancies caused by death, resignation and other causes.

6. The rules of every association registered under this Act shall bind the association and members thereof to the same extent as if each member had subscribed his name and affixed his seal thereto; and all moneys payable by any member to the association, in pursuance of said rules, shall be deemed to be a debt due from such member of the association.

7. The capital of the association shall be in shares of such denomination as mentioned in the rules.

8. The shares of the association shall be transferable subject to the consent and approval of the association.

9. All elections shall be by ballot, and each member shall have one vote for each share held by him, in respect of which he is not in default for any calls made thereon.

10. Every dispute between members or between members and the association established under this Act, or any person claiming through or under a member or under the rules of the association, and the directors, treasurer, or other officers thereof, shall be decided by arbitration in manner directed by the rules of the association, and the decision so made shall be binding and conclusive on all parties without appeal.

11. The liability of the shareholders shall be limited, that is to say, no shareholder in such association shall be in any manner liable for or charged with the payment of any debt or demand due by the association beyond the amount of his share or shares subscribed for, and any shareholder having fully paid up the amount of his said share or shares shall be absolved from all further liability.

12. The fees to be charged by the registrar for filing any certificate shall be fifty cents, and for any search relating thereto ten cents.

SCHEDULE.

(Section 1 (I).)

FORM OF CERTIFICATE.

Province of Ontario, } We (insert names of subscribers not less than five) do hereby
 TO WIT: } certify that we desire to form a company or association
 pursuant to the provisions of the "Act to provide for the incorporation of Cheese
 and Butter Manufacturing Associations."

The corporate name of the Association is to be (insert name of the Association),
 and the objects for which the Association is to be formed are (insert objects or
 which the Association is formed). The number of shares is to be unlimited and the
 capital is to consist of shares of (insert amount of shares) each, or of such other
 amount as shall, from time to time, be determined by the rules of the Association.
 The number of the trustees who shall manage the affairs of the Association shall
 be (insert the number of trustees), and the names of such trustees are (insert names
 of trustees), and the name of the place (or places) where the operations of the said
 Association are to be carried on is (or are) (insert name of place or places where the
 operations of the said Association are to be carried on.)

Dated the

day of

(Signatures).

On the day of A. D. 18 , before me personally appeared
 (insert names of subscribers to the certificate) to me known to be the individuals
 described in the foregoing certificate, and they severally before me signed the said
 certificate and acknowledged that they signed the same for the purposes therein
 mentioned.

A. B.,

Justice of the Peace, or
 Commissioner for taking Affidavits, or
 Notary Public.

*What Acts have been passed by the Legislature in regard to Cream-
 eries and Cheese Factories?*

AN ACT RESPECTING CREAMERIES (1888).

WHEREAS it is expedient that there should be a uniform standard for milk
 sent to any creamery for the purpose of being manufactured into butter;
 Therefore Her Majesty, by and with the advice and consent of the Legislative
 Assembly of the Province of Ontario, enacts as follows:

1. All milk containing less than thirteen per cent. of total solids, of which
 three and three-quarters per cent. must be chemically dry butter-fat, shall be
 deemed below the standard required in creameries for butter manufacture.
2. The owners or board of management of any creamery in the Province of
 Ontario, may make such rules and regulations as may be advisable for the due
 carrying on of the business of the creamery.
3. The patrons of all creameries may be required to subscribe their names to
 such rules and regulations, and the rules and regulations shall be binding on the
 patrons, owners or board of management who have so subscribed.

AN ACT TO PROVIDE AGAINST FRAUDS IN THE SUPPLYING OF MILK TO CHEESE
OR BUTTER MANUFACTORIES, AS AMENDED BY 55 VIC. AND 57 VIC.

HER MAJESTY, by and with the advice and consent of the Legislative
Assembly of the Province of Ontario, enacts as follows:

1. No person shall sell, supply, bring or send to a cheese or butter manufactory, or the owner or manager thereof, to be manufactured, milk diluted with water, or in any way adulterated, or milk from which any cream has been taken, or milk commonly known as "skimmed milk," without distinctly notifying, in writing, the owner or manager of such cheese or butter manufactory, that the milk so sold, supplied or brought to be manufactured has been so diluted with water, or adulterated, or had the cream so taken from it, or become milk commonly known as "skimmed milk," as the case may be.

2. No person who, in the course of his business, sells, supplies, brings or sends to any cheese or butter manufactory, or the owner or manager thereof, to be manufactured, the milk of cows, shall in the course of such dealing and business, keep back any part of the milk without distinctly notifying, in writing, the owner or manager of such cheese or butter manufactory what portion of the milk he has so kept back.

3. No person shall sell, supply, bring or send to a cheese or butter manufactory, or the owner or manager thereof, to be manufactured, any milk that is tainted, or partly sour, without distinctly notifying, in writing, the owner or manager of such cheese or butter manufactory of such milk being tainted or partly sour.

The said sections 1, 2 and 3, shall not apply where the person charged with the offence proves to the satisfaction of the justice or justices of the peace that the dilution or adulteration of the milk, or the keeping back of the strippings, was without his knowledge or privity, and contrary to his wish and intention; and that he was not aware of the dilution or adulteration or keeping back as aforesaid at the time or before so selling, supplying, bringing or sending the milk as in the said sections mentioned; or (as the case may be) was not aware at the time of or before the selling, supplying, bringing or sending the milk that the same was tainted or partly sour.

4. Any person who, by himself, or by his servant or agent, violates any of the provisions of the preceding sections of this Act, upon conviction thereof before any justice or justices of the peace, shall forfeit and pay a sum of not less than \$5 nor more than \$30, together with the costs of prosecution, in the discretion of such justice or justices, and in default of payment of such penalty and costs, shall be liable to be committed to the common gaol of the county, with hard labor, for any period not exceeding six months, unless the said penalty and the costs of enforcing same be sooner paid.

5. It shall be lawful for the owner or manager of a cheese or butter manufactory to require the owner or custodian of any cow or cows whose milk is being bought for or supplied or sent to the manufactory, to submit such cow or cows at his farm, or other premises where such cows are usually kept, to such milk test, by persons named by such owner or manager, as may be necessary for the said purpose, to ascertain the quantity and quality of the milk of such cow or cows, on any day, and at such time on any such day as may be appointed by said owner or manager, and in case the owner or custodian of the cows refuses to so submit them, or obstructs in the execution thereof the persons engaged in making the milk test, or interrupts the test, or interferes in any way with the test, or the application of its result, he shall, on complaint before any justice or justices of the peace, forfeit and pay for every such offence a sum of not less than \$10 nor more than \$100, in the discretion of the justice or justices of the peace who may hear such complaint, together with the costs of the prosecution, if so ordered, and in default of payment of such penalty and costs, shall be liable to be committed by such convicting justice or justices of the peace, to the common gaol of the county, with hard labor, for any period not exceeding six months, or until said penalty and the costs of enforcing same be sooner paid.

6. It shall be lawful for the owner or manager of any cheese or butter manufactory who suspects any person of selling, supplying, sending or bringing milk to the manufactory, of any offence under this Act, to enter upon or to appoint some person or persons to enter upon, and such appointed person may enter upon the premises of the suspected person, with or without notice, and take samples of milk from the cow or cows from which the supposed offender was or had been immediately before then procuring the milk or part of the milk so sold, supplied, sent or brought as aforesaid, and any such suspected person who obstructs or refuses to permit the taking of any such sample shall, on conviction thereof, be liable to a penalty of not less than \$10 nor more than \$50 with costs of the prosecution, and in default of payment thereof, shall be liable to be imprisoned in the common gaol of the county in which the offence has been committed for a period not exceeding three months with hard labor.

7. For the purpose of establishing the guilt of any person under the first three sections of this Act, it shall be sufficient *prima facie* evidence to show that such person, by himself, his servant, or agent, sold, supplied, sent or brought, to be manufactured, to any cheese or butter manufactory, milk substantially below the standard of that actually drawn, or by the accused represented as having been drawn from the same cow or cows within the then previous or subsequent week, provided the comparison or test is made by means of a lactometer and cream gauge, or by some other adequate means of making the comparison.

7a. In any complaint made or laid under the first three sections of this Act, and in any conviction thereon, the milk complained of may be described as deteriorated milk, without specification of the cause or mode of deterioration, and such description shall be a sufficient description of the offence to sustain a conviction, and in any complaint, information or conviction under this Act the matter complained of may be declared, and shall be held to have arisen within the meaning of *The Summary Convictions Act*, at the place where the milk complained of was to be manufactured, notwithstanding that the deterioration thereof was effected elsewhere.

8. Any pecuniary penalty under this Act shall, when recovered, be payable one-half to the informant or complainant, and the other one-half to the owner, treasurer or president of the manufactory to which the milk was sent, sold or supplied for any of the purposes aforesaid in violation of any of the provisions of this Act, to be distributed among the patrons thereof in proportion to their respective interests in and profits thereof, and all provisions of *The Summary Convictions Act* shall, so far as applicable, apply.

AN ACT TO AMEND THE ONTARIO JOINT STOCK COMPANIES' LETTERS PATENT ACT.

Chap. 35, 1892.

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

1. A company incorporated by letters patent under the provisions of *The Ontario Joint Stock Companies' Letters Patent Act*, or under the provisions of any Act of the Legislature of the former Provinces of Canada for the manufacture of cheese, may, without obtaining supplementary letters patent, carry on the business of manufacturing and selling butter, provided the shareholders shall, by a vote of not less than two-thirds in value of those present in person, or by proxy, at a general meeting of the company duly called for considering the subject, determine to extend its business so as to include the manufacture and sale of butter.

2. A manufacturing association formed under the provisions of the Act passed in the 31st year of Her Majesty's reign, intituled *An Act for the incorporation of Cheese and Butter Manufacturing Associations*, for the manufacture of cheese, may, on and subject to the making of a rule for that purpose in accordance with the provisions of the said last mentioned Act, extend its business so as to include the manufacture and sale of butter.

CONCLUSIONS.

1. Prices for grain have fallen over 30 per cent. in ten years; prices for butter and cheese have fallen less than 6 per cent.
2. Dairy farming is less exhaustive than grain farming. The sale of butter removes nothing from the soil. In fact, by dairying, the lost fertility of the soil may be restored.
3. Ontario is well adapted to dairying. We produce now 90,000,000 lb. of factory cheese, 3,000,000 lb. of creamery butter, and about 50,000,000 lb. of dairy butter. While Canadian dairy exports have been increasing those of the United States have been decreasing.
4. Our principal butter competitors in the British market are Denmark, France and Sweden. Victoria and New Zealand are rapidly increasing their exports to Britain, exceeding those from Canada.
5. Whereas our best creamery brings as high price as Danish creamery in Britain, our exports to Britain averaged over 5 cents per lb. less than the Danish exports. Our exports to Britain therefore consist largely of butter of inferior quality.
6. The production of our butter in creameries instead of in home dairies would give a large amount of high class butter of uniform quality both for home consumption and for export, and would add over \$1,000,000 to its value.
7. Patrons of creameries get as much for their cream as home butter-makers do for their butter; they are saved the work of making and marketing; they are paid in cash and returns come quickly.
8. A separator creamery with capacity for 500 cows can be built and equipped for from \$2,500 to \$3,000. Skilled butter-makers and cheese-makers are now becoming more available through the work of the Special Dairy School of Ontario Agricultural College, Guelph.
9. To show that we have made only a fair beginning in dairying, it may be stated that the average value of cheese made per head of the rural population in Ontario is \$8; whereas Leeds, Grenville and Oxford average \$32 per head.
10. In grain growing we are competing in foreign markets with the products of the cheapest labor in other countries; in beef and mutton also we compete with the products of cheap land; in dairying we are competing with the work of more skilled labor, and with the products of high-priced land. The outlook for dairying in Ontario, therefore, is promising, provided we aim to produce a constant supply of uniformly good articles, namely, fine factory cheese and fine creamery butter.

